



Armed Forces College of Medicine

AFCM

Soft tissue tumors



- They include mesenchymal tumors **other than bone and cartilage.**
- Current evidence indicates that these tumors arise from ***pluripotent mesenchymal cells*** and not mature mesenchymal cells.
- **Benign soft tissue tumors are much more common.**

Tumors of adipose tissue	1. Lipoma.	2. Liposarcoma
Tumors of fibrous tissue	1. Fibroma	2. Fibrosarcoma
Tumors of smooth muscles	1. Leiomyoma	2. Leiomyosarcoma
Vascular tumors	1. Hemangioma 3. Hemangioendothelioma 4. angiosarcoma	2. Lymphangioma

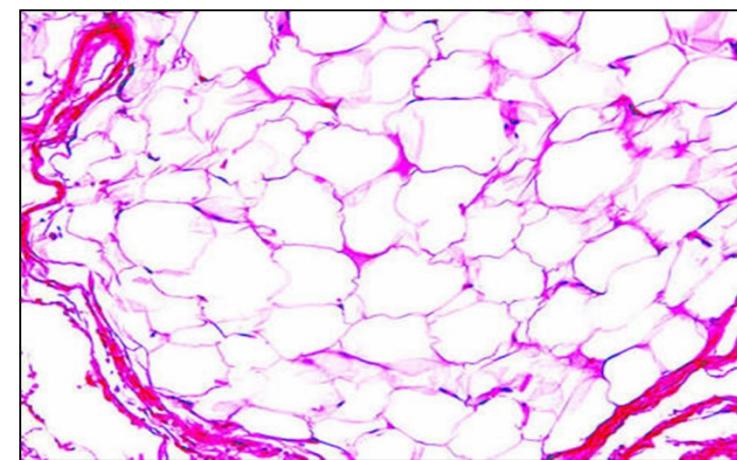
Lipoma

Lipoma: is the most common soft tissue tumor.

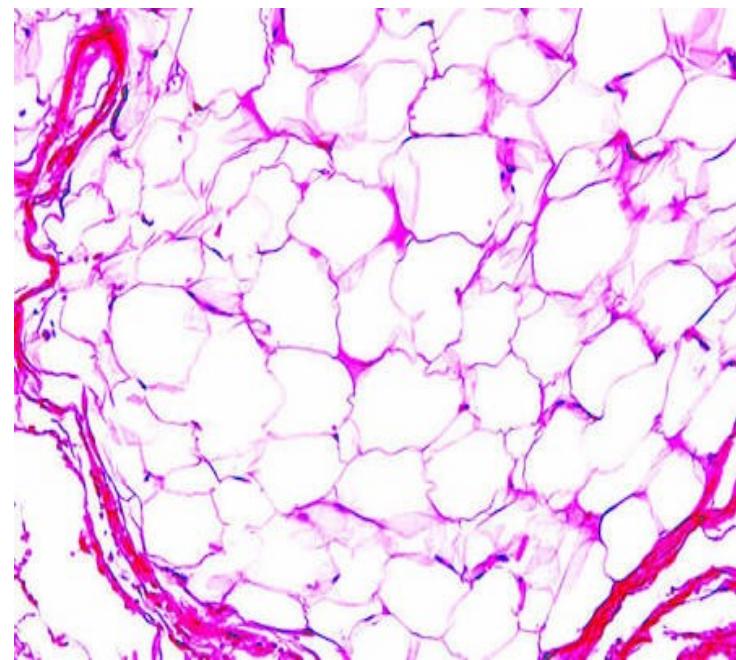
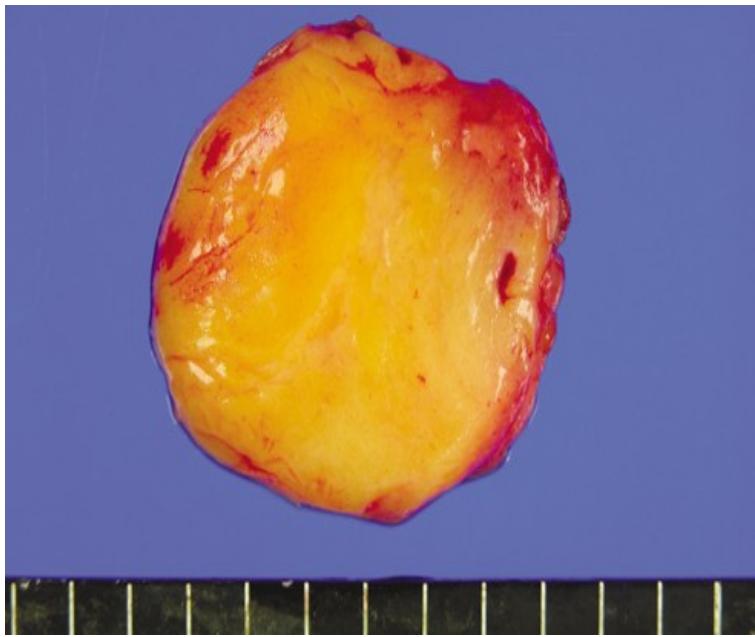
It is a slowly growing **benign** tumor of adipose tissue that arise from **subcutaneous fat**, intermuscular

Gross picture: well **defined** **capsulated** mass with yellowish soft lobulated greasy cut surface.

Microscopic picture: **capsulated** with delicate vascularized fibrous septae dividing the tumor into **lobules** formed of mature fat cells.



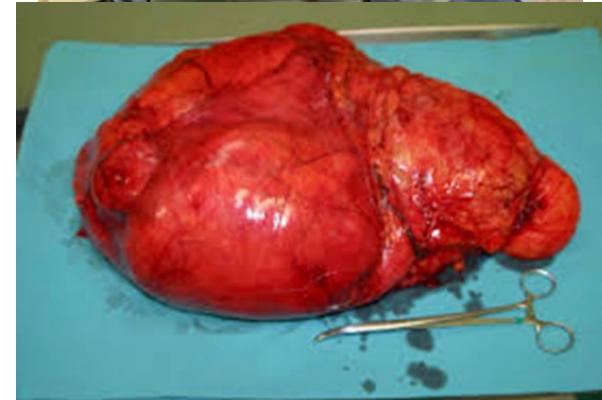
Lipoma



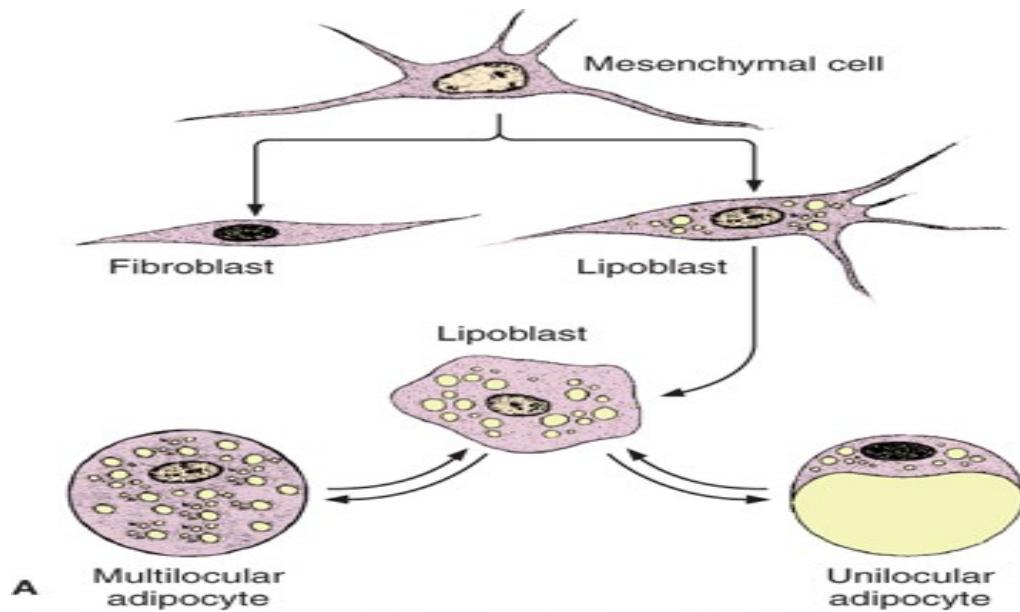


Liposarcoma

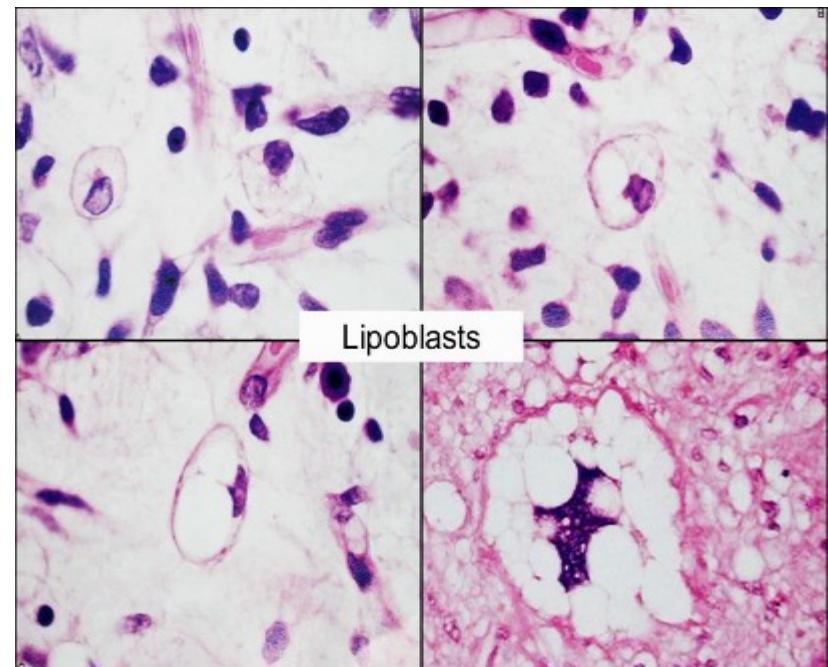
- ❖ **Liposarcoma:** malignant tumor of adipose tissue.
- ❖ They occur in the **fifth to sixth decade.**
- ❖ They arise commonly in the **retroperitoneum** as relatively :
- **large** well circumscribed masses, **non-capsulated** with glistening yellowish cut surface.



Liposarcoma

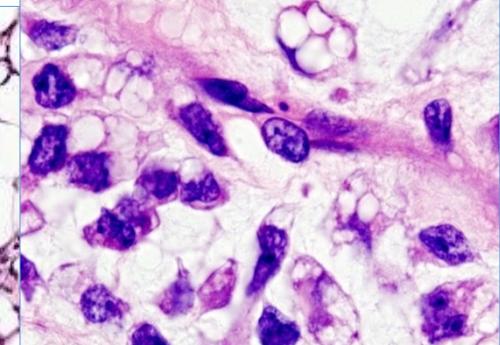
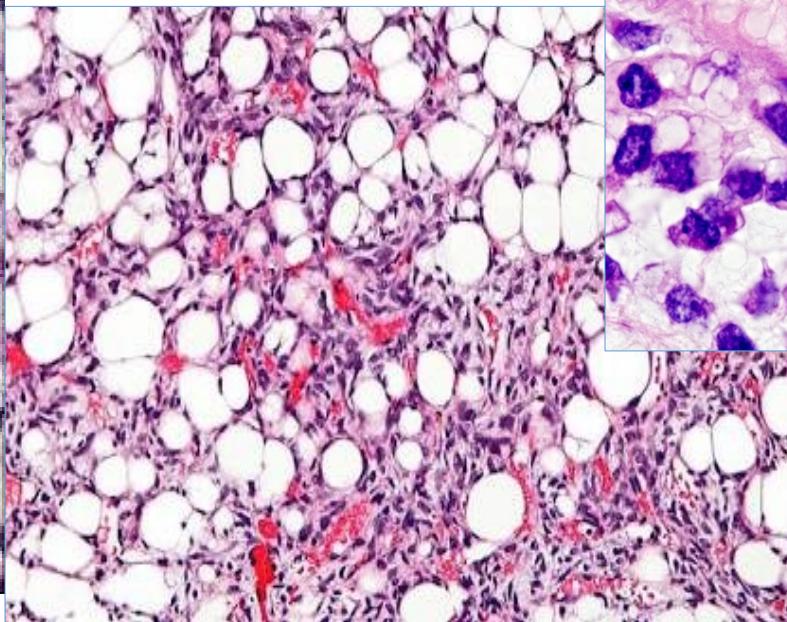
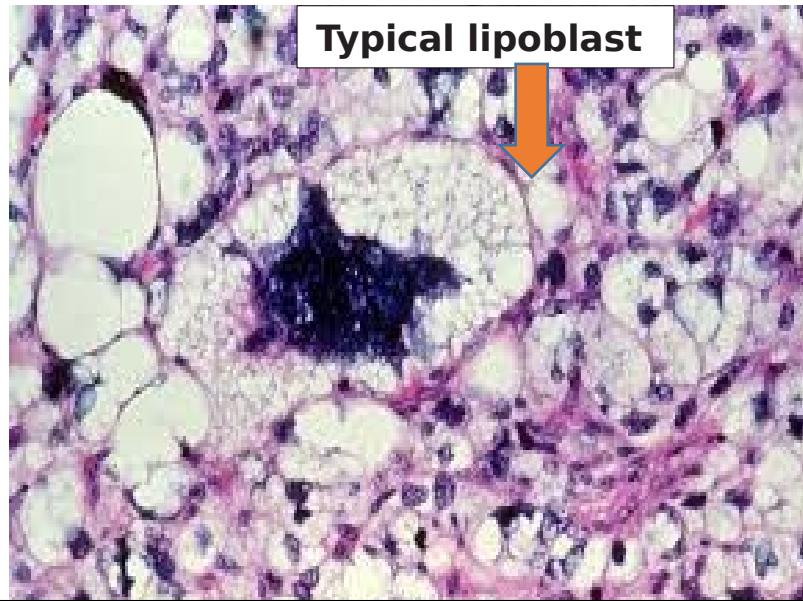


Source: Howard M. Reisner: Pathology: A Modern Case Study
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Extended Modular Program

Liposarcoma



Lipoblasts

- Primitive cells indicative of fatty differentiation /**univacuolated and multivacuolated**
- Indented atypical nucleus recapitulating fetal fat cells.

Extended Modular Program

Tumors of adipose tissue



Lipoma



Liposarcoma



Tumors of smooth muscle



1. Leiomyoma: Benign smooth muscle tumors.

They are common in the **uterus**, and **gastrointestinal tract**.

2. Leiomyosarcoma: rare malignant smooth muscle tumors.

Can occur in the uterus, and stomach. Present grossly by a **large bulky fleshy mass** with wide areas of hemorrhage and **necrosis**.

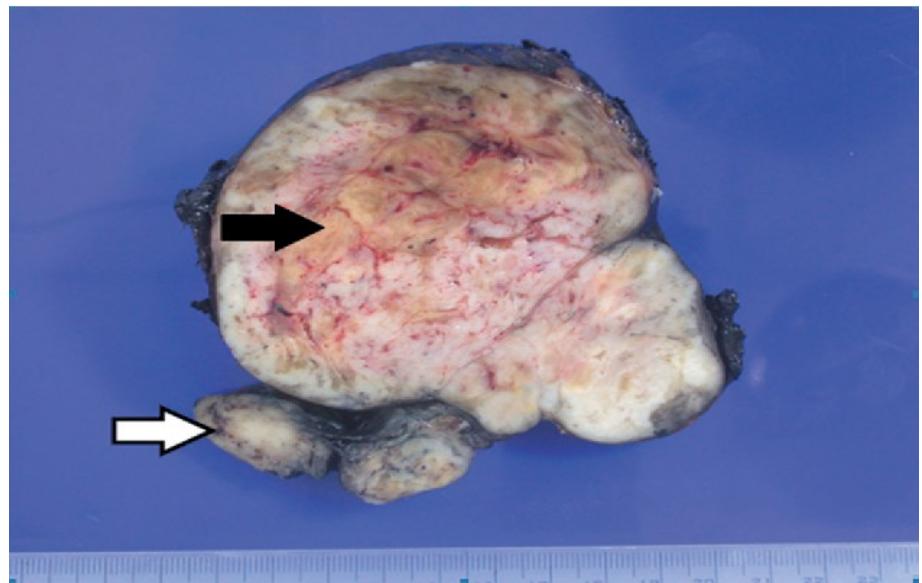
Tumors of smooth muscle



Leiomyoma



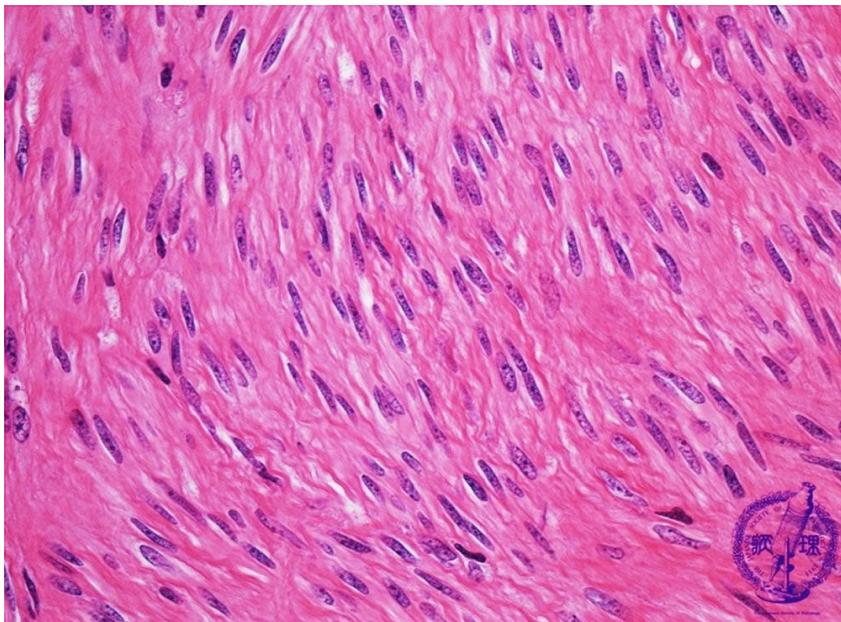
Leiomyosarcoma



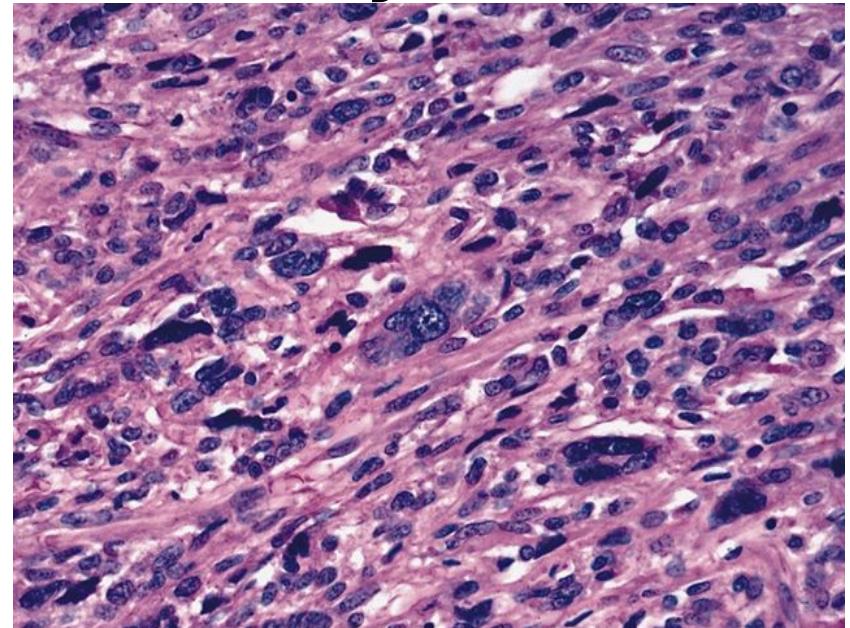
Tumors of smooth muscle



Leiomyoma



Leiomyosarcoma



Benign vascular tumors



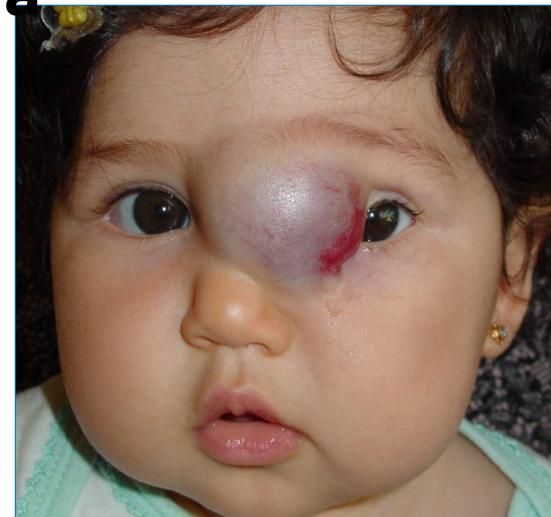
1- Hemangioma: Benign vascular tumor formed of vascular spaces filled with blood commonly seen in infants or children.

- It has two histologic variants:
 1. Capillary hemangioma: **the commonest type**
 2. Cavernous hemangioma.
- ***Gross:*** It is well defined non capsulated tumor.
- ***Microscopic:*** It is formed of capillary sized or large vascular spaces lined by endothelium and separated by connective

Hemangioma



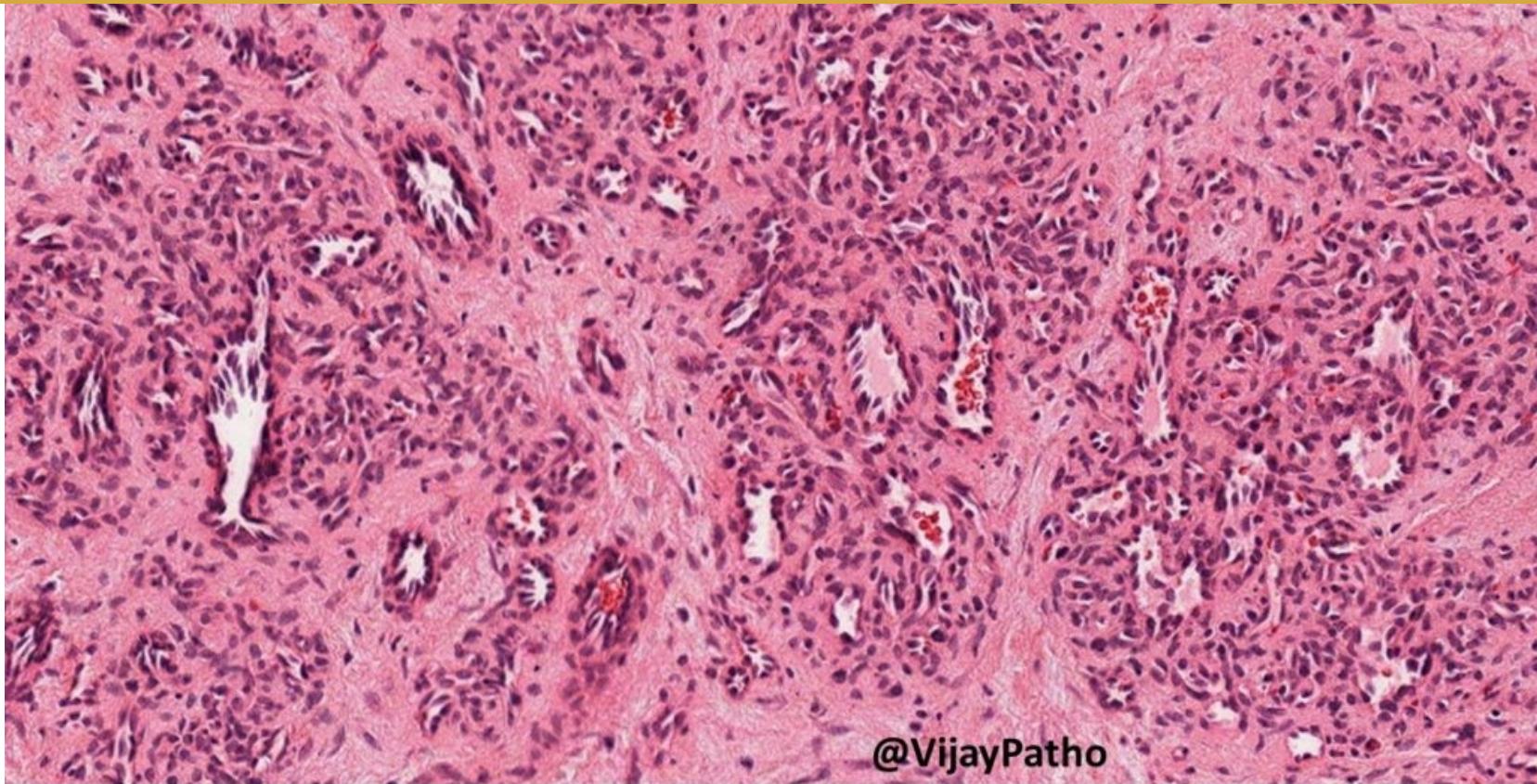
**Capillary hemangioma
cavernous hemangioma**



Cavernous Hemangioma



Capillary Hemangioma



@VijayPatho

Cavernous Hemangioma



Large spaces filled with blood



@ViiavPatho

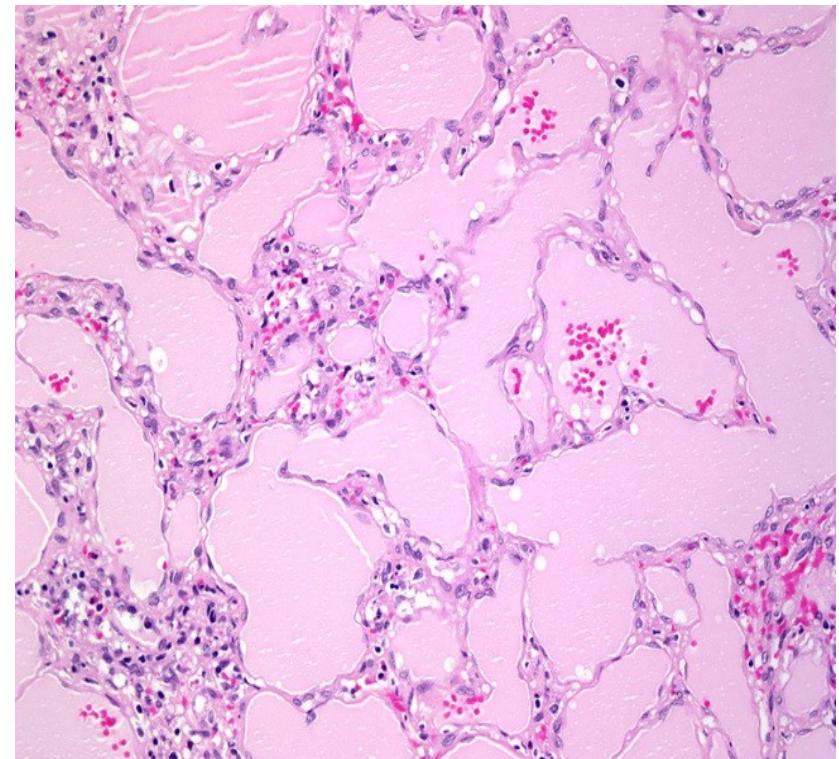
Benign vascular tumors



2- Lymphangioma: Benign vascular tumor formed of lymphatic vascular spaces filled with lymph (not blood) & often congenital

- It is well defined non capsulated tumor.
- It is formed of capillary sized or large vascular spaces lined by endothelium and separated by connective tissue stroma rich in lymphocytes.

Lymphangioma (Cystic Hygroma)





Osteomyelitis





Osteomyelitis

Definition:

Inflammation of bone & bone marrow.

I- Infection.

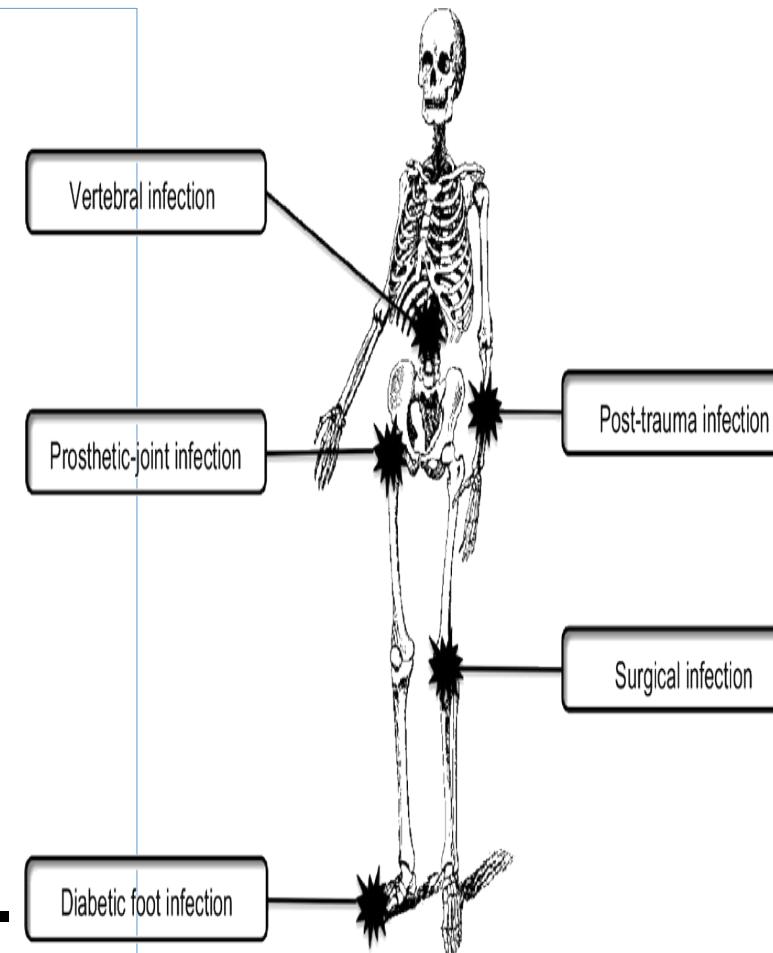
Predisposed by:

A- Trauma or surgical procedure.

B- Vascular insufficiency.

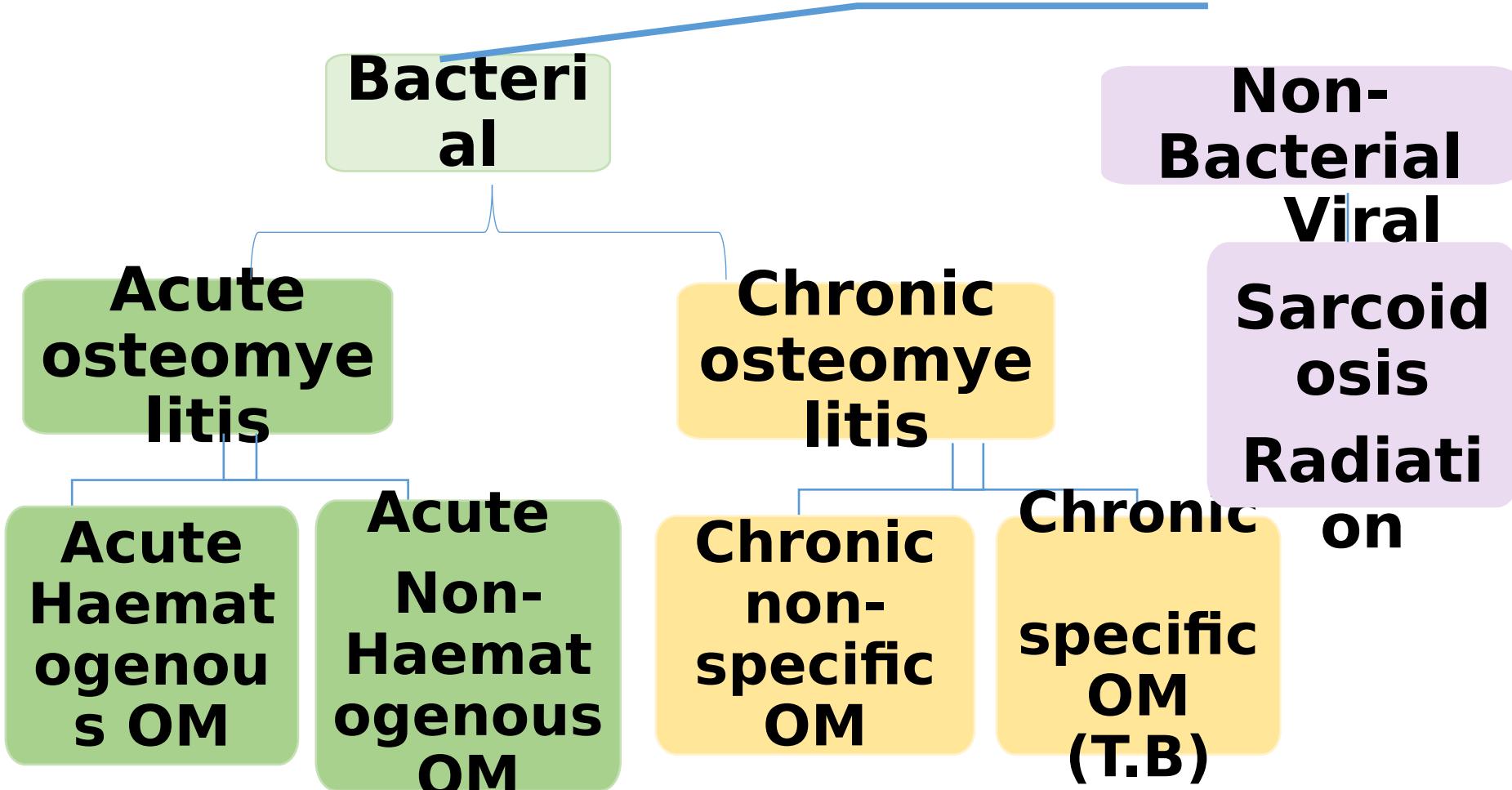
C- Bacterial colonization.

II- Non -Infection.





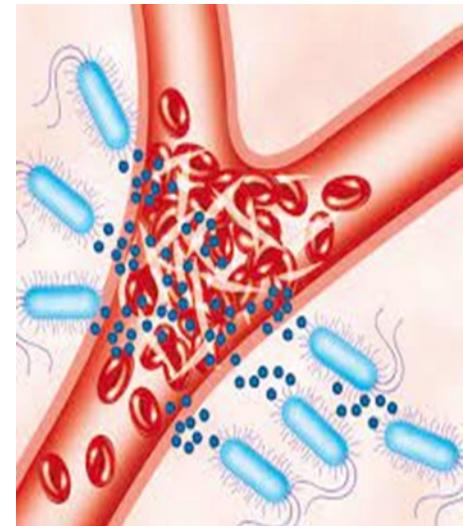
Osteomyelitis



Acute Hematogenous Osteomyelitis



- ❖ Most common in children
- ❖ The organisms:
 - **Staph. aureus** in 80-90% of cases
 - Less commonly E.coli ,
Salmonella, Staph albus
Pneumococci or Streptococci.





Acute Hematogenous Osteomyelitis

Throat
Tonsils
Teeth



Skin infection
Paromycchia
Furuncle
Infected wound



Urinary tract infection



Gastrointestinal infection
Salmonella
Typhoid
Appendicitis
Peritonitis
Umbilical infection



Lung infection
Pneumonia
Abscess
Tuberculosis

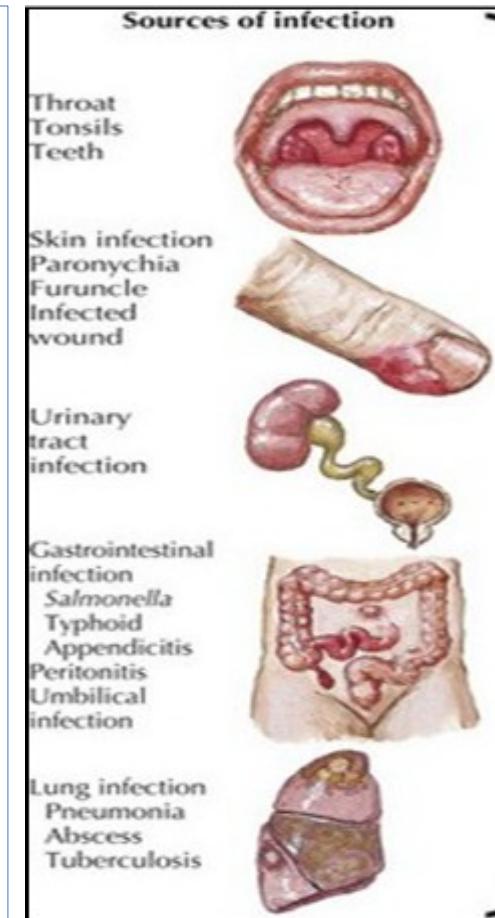


B

Acute Hematogenous Osteomyelitis



1. The organisms are derived from remote infections (e.g respiratory, intestinal, urinary, oral, or skin).
2. They reach the blood stream (bacteraemia) following trivial injuries such as intestinal mucosal abrasions during defecation or slight oral mucosal injuries due to



Acute Hematogenous Osteomyelitis



Pathogenesis:

The bones most commonly affected

THE LONG BONES vertebrae.

The location of the lesions within the affected long bone is influenced by the vascular circulation, which changes with age.



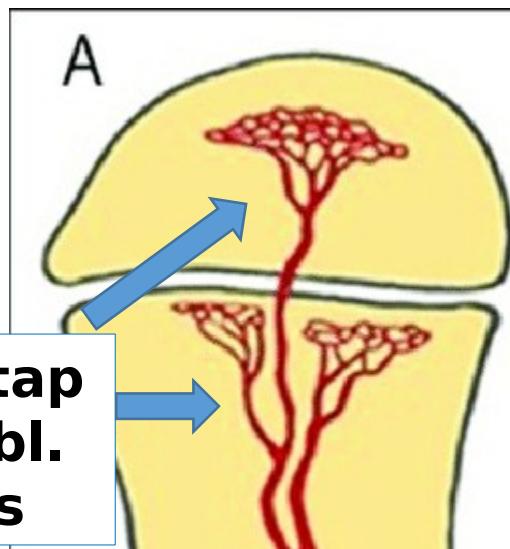


Acute Hematogenous Osteomyelitis

Infants < 18 mon.

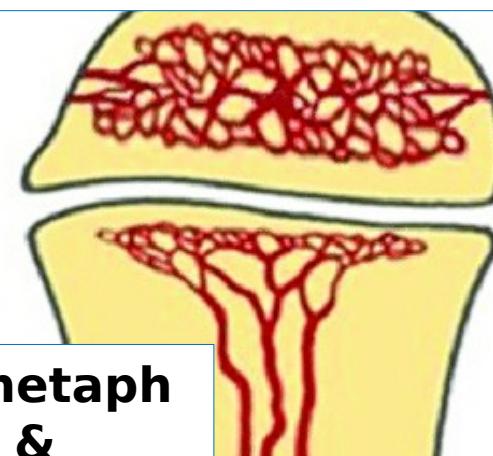
children (18 mon. to 16 yrs)

closure of the growth plate

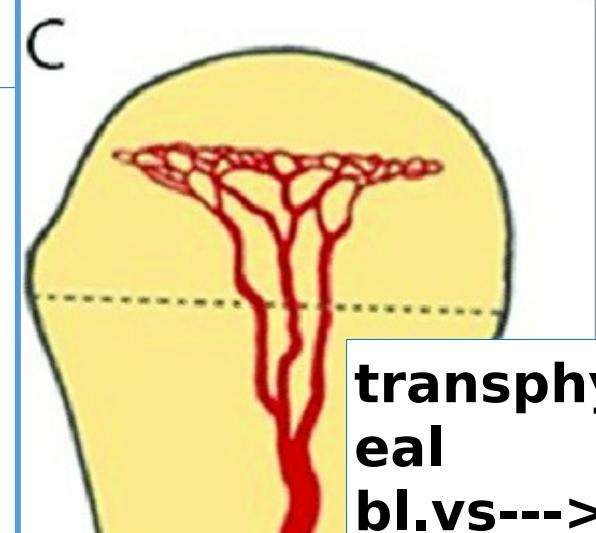


metap h. bl.
Vs

epiphysis = its own
bl.vs



metaph v &



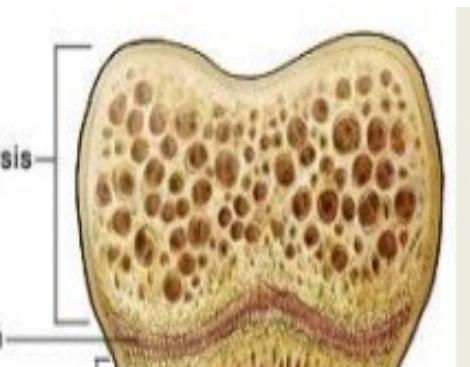
transphys
eal
bl.vs--->

A natural barrier is formed by the physis preventing spread of OM in the epiphysis and joints. Therefore, children **18 mon. & 16 years** will present with an initial joint infection and no bony findings.

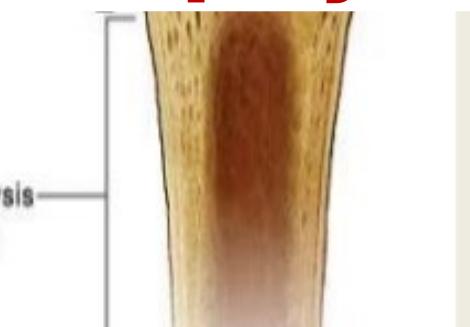


Acute Hematogenous Osteomyelitis

Children

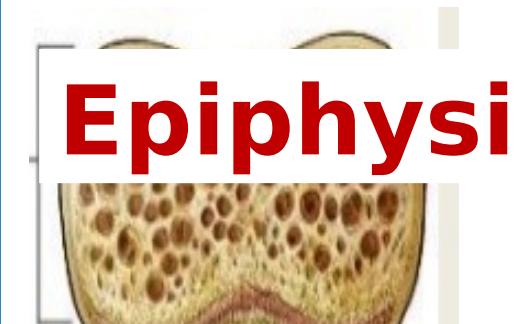


Epiphysis



1. The **most vascular** part of bone
2. The **blood flow** within the metaphysis is normally **slow**
3. Metaphysis is the most **subjected part of bone to trauma** (trauma is known to be a

Adults



Metaphysis



Acute Hematogenous Osteomyelitis



Clinical presentation

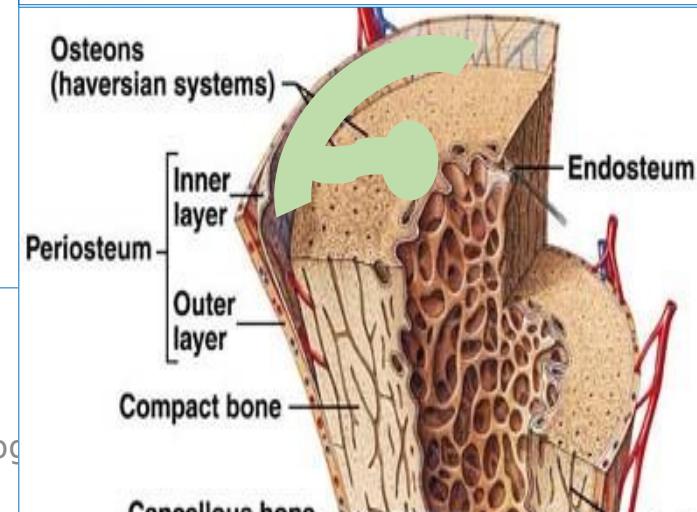
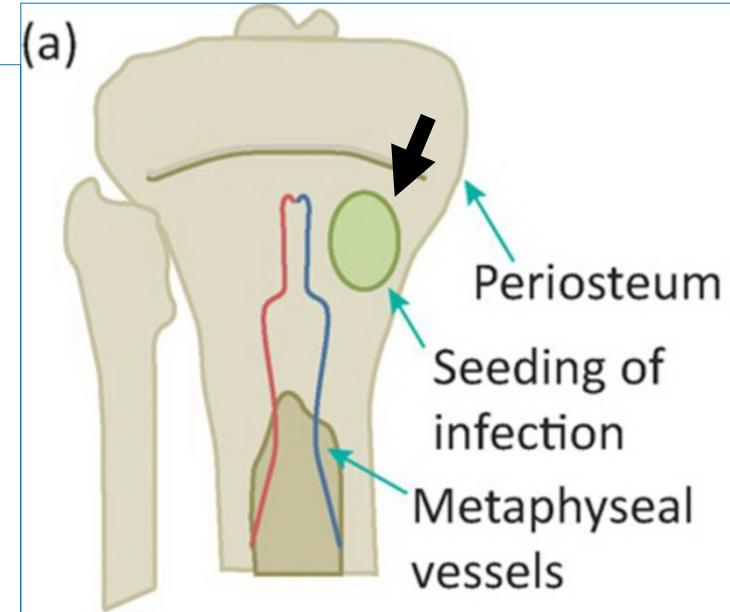
- The main hallmark is **fever** with localized **bony tenderness**
- In neonates ☐ **pseudoparalysis** and pain on **diaper change**



Pathogenesis of Acute Hematogenous Osteomyelitis



1. The initial lesion is a suppurative focus in the metaphysis.
2. Spread of infection occurs penetrates the endosteum ----> through the Haversian system --> collects under the periosteum
---> **Subperiosteal abscess**





Acute Hematogenous Osteomyelitis

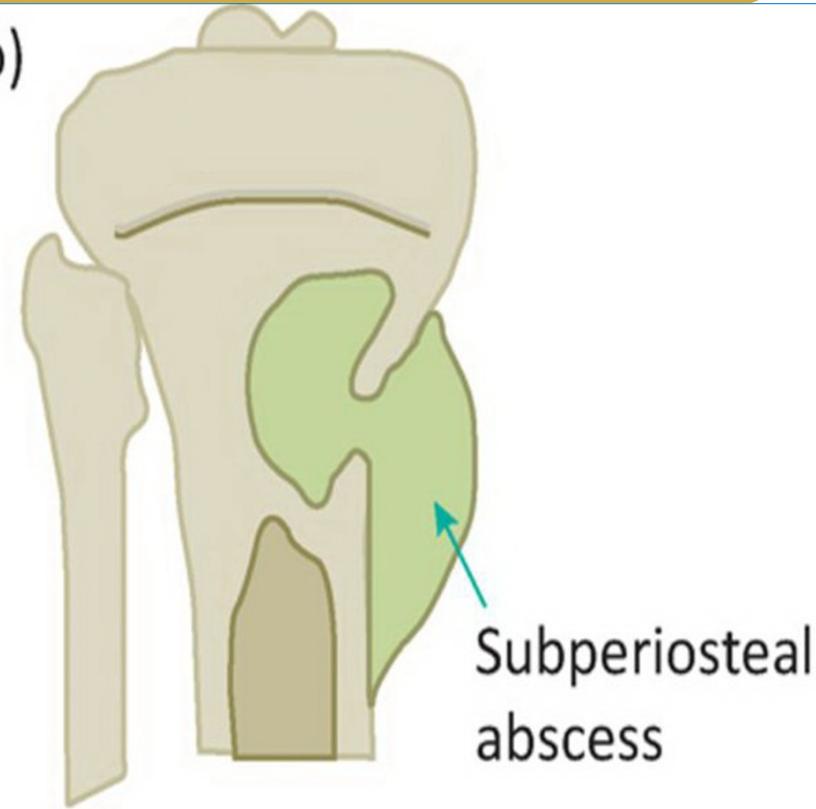
3. Bone necrosis

due to:

A. Bacterial toxins.

B. Ischemia due to stretching, compression or thrombosis of periosteal vessels.

(b)

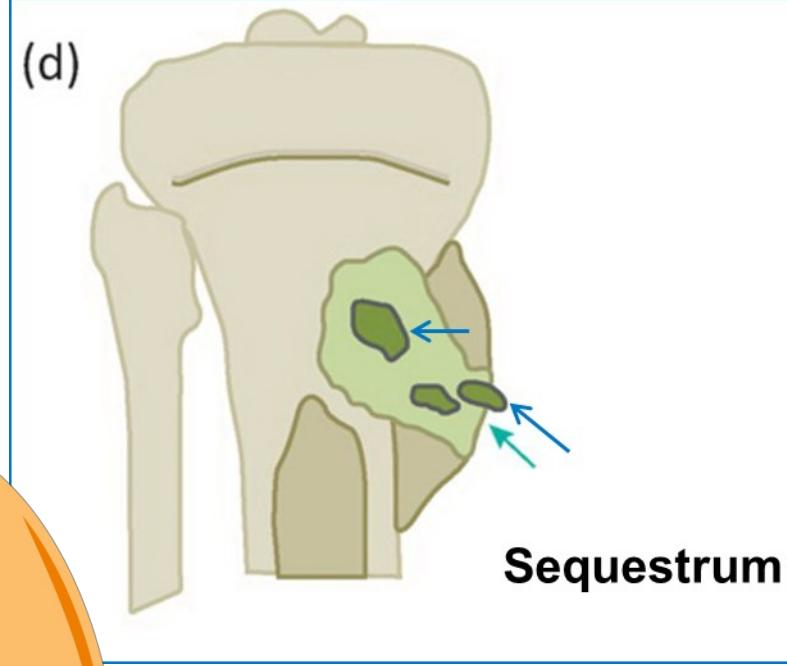
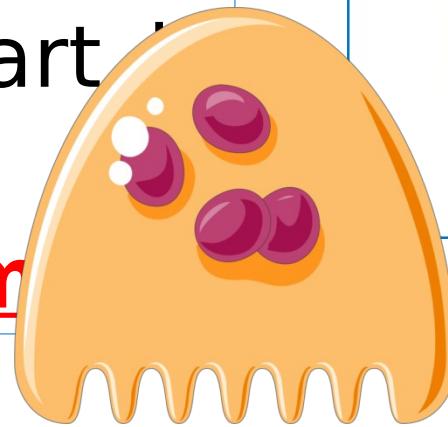




Acute Hematogenous Osteomyelitis

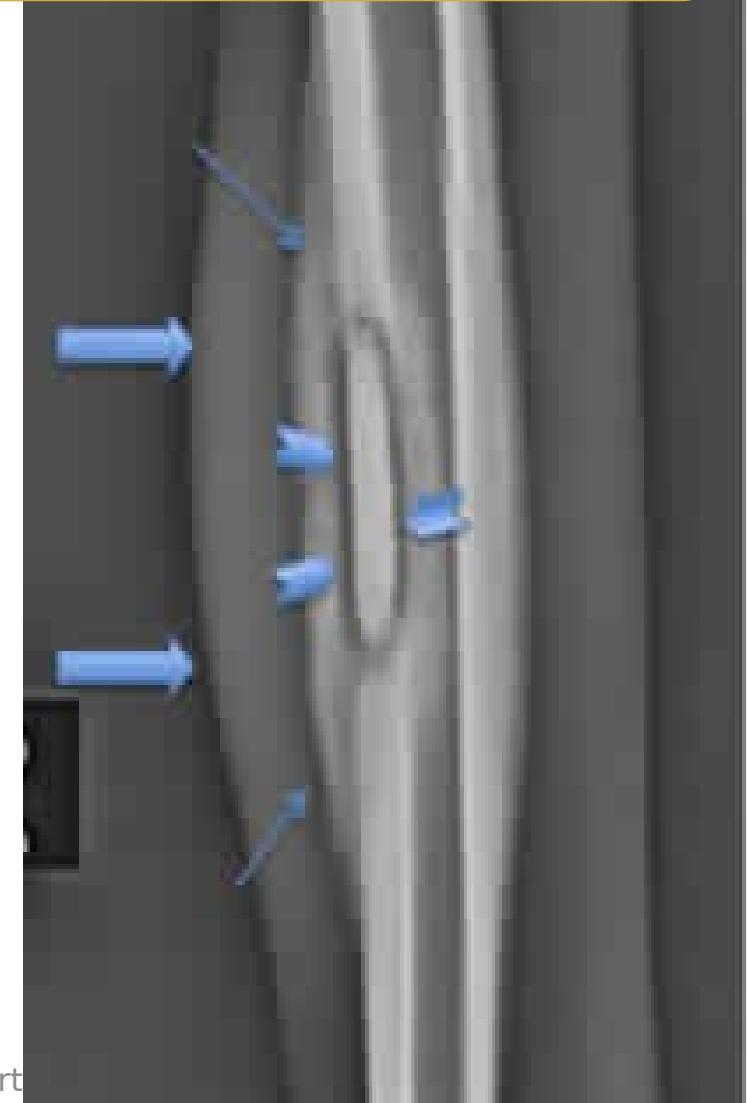
4. **Separation** of the necrotic bone by action of osteoclasts. This separated part called

Sequestrum





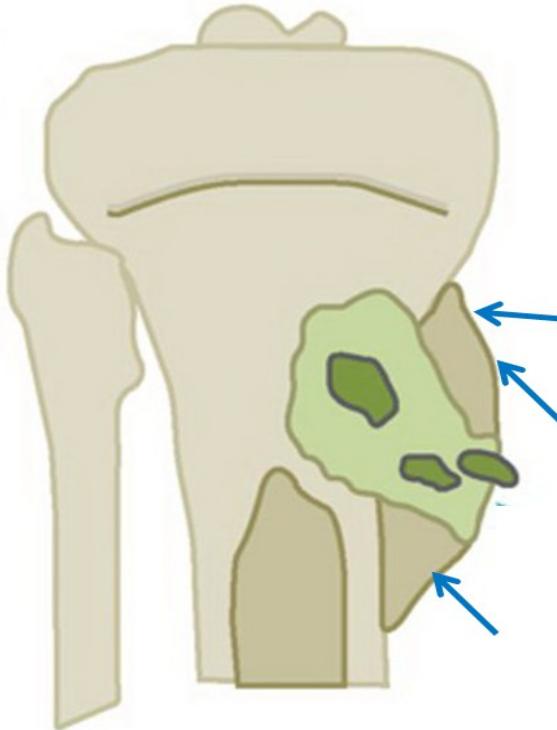
Acute Hematogenous Osteomyelitis





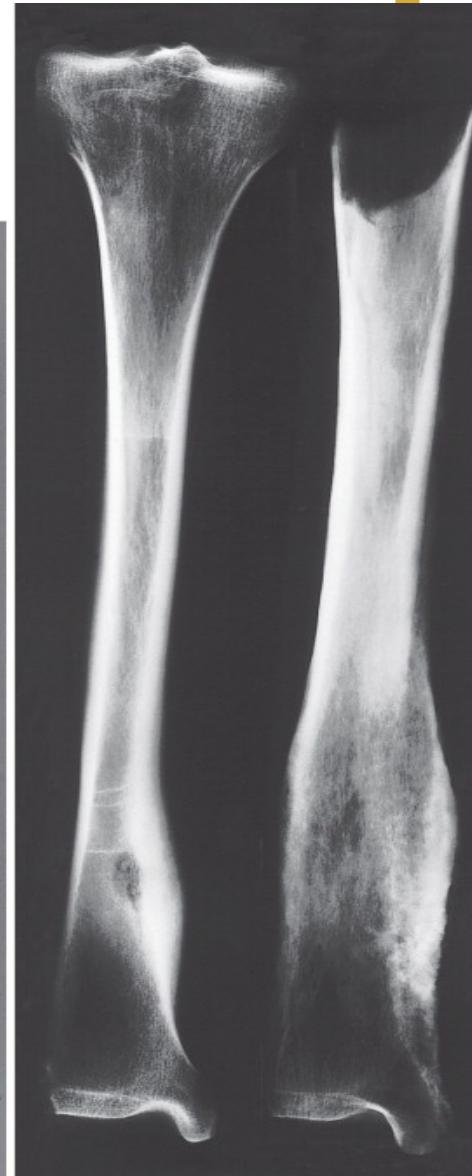
Acute Hematogenous Osteomylitis

(d)



involucrum

involucrum





Acute Hematogenous Osteomyelitis

The sinuses now appear as thick-walled holes called **cloacae**.

This occurs in the chronic phase

(d)



(d)



Cloacae:
discharging
pus and bone

Acute Hematogenous Osteomyelitis



Complications:

1. Pathological fracture.
2. Direct spread of infection □ arthritis, myositis, neuritis..
3. Blood spread of infection □ toxæmia, septicaemia and pyæmia.
4. Chronic suppurative osteomyelitis.

This may be further complicated by:

- a) Secondary amyloidosis.
- b) Epithelialization of the sinuses which may later give rise to squamous cell carcinoma

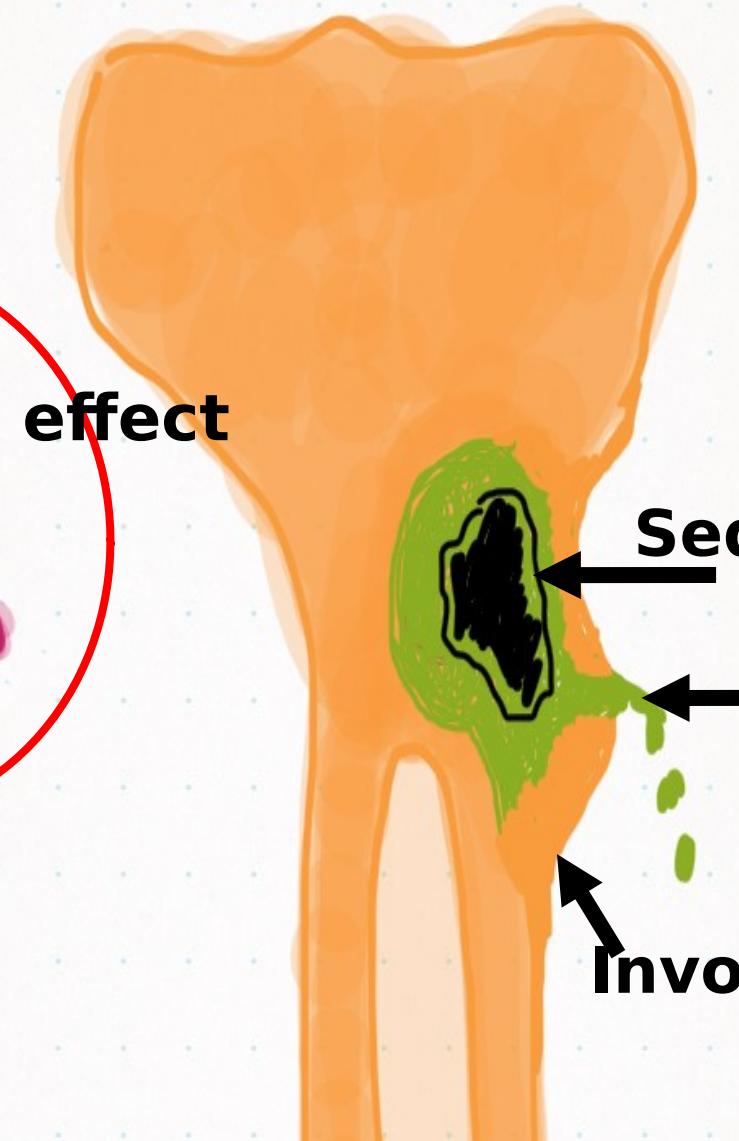
Acute Hematogenous Osteomyelitis



PATHOL



Osteoclast effect



Blood vessels compressed
ischaemia

Sequestrum

Sinus formation

Involucrum

Lecture Quiz



In a 5 years old male patient with painful tender tibial swelling, a necrotic separated bony part is called:

- 1. Involucrum**
- 2. Sequestrum**
- 3. Cloaca**
- 4. Sinus**
- 5. Abscess**

Which of the following is a cause of imperfect bone healing:

- 6. Male gender**
- 7. Young age**
- 8. Hypertension**
- 9. Corticosteroid therapy**
- 10. Exercise**

SUGGESTED TEXTBOOKS



1. Robbins basic pathology, ninth Edition
2. Kaplan step 1 pathology lecture notes
2017 (P.78-98)